

Application No.: 10/501,452
Art Unit: 1796

Amendment Under 37 C.F.R. §1.111
Attorney Docket No.: 042586

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1. (Previously presented): A block copolymerization polyimide composition,
comprising a block copolymerization polyimide comprising phenolic hydroxyl groups
dissolved in at least one solvent selected from a ketone, an ether and an ester,
wherein the block copolymerization polyimide is obtained by heating a tetracarboxylic
dianhydride and a diamine in at least one solvent selected from a ketone, an ether and an ester
and in the presence of a catalyst resulting from a lactone and a base and wherein the diamine is at
least one selected from the group consisting of 3,3'-diamino-4,4'-dihydroxydiphenylsulfone, 4,4'-
diamino-3,3'-dihydroxybiphenyl, and 2,2-bis(3-amino-4-hydroxyphenyl) hexafluoropropane.
2. Cancelled.
3. (Currently Amended): The block copolymerization polyimide composition according
to claim 1, wherein the tetracarboxylic dianhydride is at least one selected from the group
consisting of 3,3',4,4'-biphenyltetracarboxylic dianhydride, 3,3',4,4'-benzophenonetetracarboxylic
dianhydride, 3,3',4,4'-biphenyl ether tetracarboxylic dianhydride, 3,3',4,4'-
diphenylsulfonetetracarboxylic dianhydride (DSDA), bicyclo(2,2,2)-oct-7-ene-2,3,5,6-
tetracarboxylic dianhydride, 1,2,4,5-cyclohexanetetracarboxylic dianhydride, 2,2-bis(3,4-
dicarboxyphenyl)hexafluoropropane dianhydride, pyromellitic dianhydride, and ~~5-(2,5-
dioxotetrahydrofuryl)-3-methyl-3-cyclohexene-1,2-dicarboxylic anhydride~~ 5-(2,5-dioxotetra-
hydrofuryl)-3-methyl-3-cyclohexene-1,2-dicarboxylic anhydride.

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4. (Previously presented): The block copolymerization polyimide composition according to claim 1, wherein the diamine is at least two selected from the group consisting of 3,3'-diamino-4,4'-dihydroxydiphenylsulfone, 4,4'-diamino-3,3'-dihydroxybiphenyl, and 2,2-bis(3-amino-4-hydroxyphenyl) hexafluoropropane.

5. (Currently Amended): The block copolymerization polyimide composition according to claim 1, wherein the solvent in which the block copolymerization polyimide is obtained at ~~least one solvent~~ comprises the ketone and the ketone is at least one ketone selected from the group consisting of methyl ethyl ketone, methyl propyl ketone, methyl isopropyl ketone, methyl butyl ketone, methyl isobutyl ketone, methyl n-hexyl ketone, diethyl ketone, diisopropyl ketone, diisobutyl ketone, cyclopentanone, ~~cyclohexanone~~ cyclohexanon, ~~methylecyclohexanone~~ methylcyclohexanon; acetylacetone, diacetone alcohol, and cyclohexen-1-one.

6. (Currently Amended): The block copolymerization polyimide composition according to claim 1, wherein the solvent in which the block copolymerization polyimide is obtained at ~~least one solvent~~ comprises the ether and the ether is at least one ether selected from the group consisting of dipropyl ether, diisopropyl ether, dibutyl ether, tetrahydrofuran, tetrahydropyran, ethyl isoamyl ether, ethyl-t-butyl ether, ethyl benzyl ether, cresyl methyl ether, anisole, and phenetole.

7. (Currently Amended): The block copolymerization polyimide composition according to claim 1, wherein the solvent in which the block copolymerization polyimide is obtained at ~~least one solvent~~ comprises the ester and the ester is at least one ester selected from the group consisting of methyl acetate, ethyl acetate, propyl acetate, isopropyl acetate, butyl acetate,

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isobutyl acetate, amyl acetate, isoamyl acetate, 2-ethylhexyl acetate, cyclohexyl acetate, methylcyclohexyl acetate, benzyl acetate, methyl acetoacetate, ethyl acetoacetate, methyl propionate, ethyl propionate, butyl propionate, benzyl propionate, methyl butyrate, ethyl butyrate, isopropyl butyrate, butyl butyrate, isoamyl butyrate, methyl lactate, ethyl lactate, butyl lactate, ethyl isovalerate, isoamyl isovalerate, diethyl oxalate, dibutyl oxalate, methyl benzoate, ethyl benzoate, propyl benzoate, and methyl salicylate.

8. (Currently Amended): The block copolymerization polyimide composition according to claim 1, wherein the solvent in which the block copolymerization polyimide is obtained at least one solvent further contains at least one compound selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, and dimethylsulfoxide.

9. (Previously presented): The block copolymerization polyimide composition according to claim 1, wherein the lactone is γ -valerolactone, and the base is at least one of pyridine and N-methylmorpholine.

10. (Previously presented): The block copolymerization polyimide composition according to claim 1, wherein the block copolymerization polyimide has a weight-average average molecular weight of 10,000 to 200,000 as calculated on a polystyrene basis.

11. (Previously presented): A positive photosensitive polyimide composition, which comprises a block copolymerization polyimide comprising phenolic hydroxyl groups and comprising a tetracarboxylic dianhydride and a diamine and soluble in at least one solvent of an ether, a ketone and an ester, and a photooxygenation compound.

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12. (Previously presented): A positive photosensitive block copolymerization polyimide ink composition, which comprises a block copolymerization polyimide comprising phenolic hydroxyl groups and comprising a tetracarboxylic dianhydride and a diamine and soluble in at least one solvent of an ether, a ketone and an ester, and a photooxygenation compound.

13. (Previously presented): A process of producing a block copolymerization polyimide composition comprising phenolic hydroxyl groups introduced by a diamine, comprising steps of heating a tetracarboxylic dianhydride and a diamine in a solvent that contains at least one of a ketone, an ether or an ester and in the presence of an acid catalyst generated from a lactone and a base to form a polyimide oligomer, and adding either one of a tetracarboxylic dianhydride or a diamine to said polyimide oligomer for reaction therewith.

14. (Currently Amended): A process of producing a block copolymerization polyimide composition comprising phenolic hydroxyl groups introduced by a diamine, comprising steps of heating a tetracarboxylic dianhydride and a diamine in a solvent selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide and N,N-dimethylsulfoxide and in the presence of an acid catalyst generated from a lactone and a base to form a polyimide oligomer, then adding either one of a tetracarboxylic dianhydride or a diamine to said polyimide oligomer for reaction therewith, then subjecting [[a]] the reaction product to precipitation using a ~~poor~~ solvent, filtration and drying, and dissolving a resulting product in a solvent comprising at least one of a ketone, an ether and an ester.

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15. (Original): The process of producing a block copolymerization polyimide composition according to claim 14, wherein the lactone is γ -valerolactone, and the base is at least one of pyridine and N-methylmorpholine.

16. (Currently amended): The block copolymerization polyimide composition according to claim 1, comprising at least a second diamine selected from the group consisting of siliconediamine, bis(3-aminopropyl)ether ethane, siloxanediamine, N,N-bis(3-aminopropyl)ether, 1,4-bis(3-aminopropyl)piperazine, isophoronediamine, 1,3'-bis(aminomethyl)cyclohexane, 3,3'-dimethyl-4,4'-diamino-dicyclohexylmethane, 4,4'-methylenebis (cyclohexylamine), 4,4'-diaminodiphenyl ether, 3,4'-diaminodiphenyl ether, 3,3'-diaminodiphenyl ether, 4,4'-diaminodiphenylsulfone, 3,4'-diamino-diphenylsulfone, 3,3'-diamino-diphenylsulfone, 2,4'-diaminodiphenyl ether, 1,3-bis(4-aminophenoxy)benzene (m-TPE), 1,3-bis(4-aminophenoxy)benzene, 2,2-bis[4-(4-aminophenoxy)phenyl]propane, 2,2-bis[4-(4-aminophenoxy)phenyl]hexafluoropropane, bis[4-(4-aminophenoxy)phenyl] sulfone, bis[4-(3-aminophenoxy)phenyl]sulfone, 4,4'-bis(4-aminophenoxy)biphenyl, 1,4-bis(4-aminophenoxy)benzene, 4,4'-diaminodiphenylsulfide, 3,4'-diaminodiphenylsulfide, 3,3'-diaminodiphenylsulfide, ~~3,3'-diamino-4,4'-dihydroxydiphenylsulfone~~ 3,3'-diamino-4,4'-dihydroxydiphenylsulfone, 2,4'-diaminotoluene, 2,5- diaminotoluene, 2,6- diaminopyridine, 4,4'-diamino-3,3'-dimethoxybiphenyl, 4,4'-diamino-3,3'-dimethylbiphenyl, and 9,9'-bis(4-aminophenyl)fluorene.